CASE STUDY: FARMTEL

Stretching Broadband Coverage without Breaking the Bank

How Motorola's Wireless DSL Solution Helped a Carrier Unleash Market Expansion Opportunities and Fuel New Revenue Growth

MOTOROLA

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Synopsis

Farmers & Merchants Mutual Telephone Co. (FarmTel) has served the telecommuni-cations needs of rural Southeastern Iowa for over 65 years. As an independent local exchange carrier (ILEC) based in Wayland, Iowa, FarmTel prides itself on providing reliable, high-quality communications services to its residential and small business customers alike. This corporate philosophy has fueled innovation and a commitment to bring new broadband services to rural areas — areas that are often overlooked by telecommunications providers using traditional DSL services alone.

Typical DSL networks are limited by an 18,000 feet distance from the central office. Due to the rural market that FarmTel serves, they selected a specialized DSL product that allowed them to provide coverage in the majority of the local exchanges — a nine mile symmetrical area. This solution, however, proved very expensive on a per subscriber basis. In addition, customers outside of their service area were clamoring for broadband connections and their needs were left largely unmet. Recognizing the opportunity to expand their business, penetrate new customer markets and realize new revenue streams — something not easily attained in telecommunications — FarmTel turned to Motorola for their wireless DSL solution.

While initially skeptical about unlicensed broadband products and concerned about the quality of service offerings by surrounding Internet Service Providers (ISPs), FarmTel was won over in the end by the superior performance characteristics of the Canopy® wireless broadband platform. The next step was convincing the company's board of directors who today is delighted with the service. "They love it, it is nothing but a money maker for us," says FarmTel.

ABOUT THE COMPANY

Founded in 1938, Farmers & Merchants Mutual Telephone Co. (FarmTel) provides telephone, cable, cellular, paging, dial-up, DSL and wireless broadband services at competitive prices to residential and small business customers in and around an approximate 100 square mile footprint in Southeastern Iowa.

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The Rural Broadband Challenge

FarmTel's service area is best described as an island surrounded on all sides by one of Iowa's dominant LECs, Specifically, FarmTel's ILEC territory covers an area of approximately 100 square miles of Southeastern Iowa and is located in a predominantly rural area of the state.

"Think of the area as a donut. We are the donut hole," quipped Rex McGuire, general manager for FarmTel. "We are 100% surrounded by this LEC." Due to this business landscape, the ability for FarmTel to grow beyond their existing service area was limited. If FarmTel were to grow, then new, innovative approaches would have to be found.

With headquarters in Wayland, Iowa FarmTel's territory covers portions of Henry, Jefferson and Washington counties, which together have a combined population of approximately 54,000. Key towns served by the wireless broadband network include Mount Pleasant, Swedesburg, Wayland, Olds, Winfield, Mount Union and Crawfordsville.

"The neighboring exchange is stuck on that old rule of 18,000 feet from the office. If you don't fall within that number, they don't even think about serving you with broadband services," stated McGuire. "In rural Iowa, we have more customers outside the 18,000 feet than inside and people were screaming for faster Internet service."

Given the distance between towns and their relatively small size, providing commercial broadband services is generally cost-prohibitive from an infrastructure perspective. Broadband services in rural areas are consequently in short supply. This is a problem faced by many rural ILECs, including FarmTel.

Innovative Carrier Expands Services in Southeast Iowa

In early 2001, FarmTel began to explore options for providing Internet connectivity for its customers. FarmTel was committed to providing its customers equal access to services offered in the urban centers of Iowa. Mindful of the infrastructure costs, FarmTel sought a vendor that could supply a highly scalable solution with a low initial investment. Ultimately, the company settled on a 1Mbps symmetrical service. The chosen DSL infrastructure solution would enable FarmTel to grow step-by-step, in increments of 12 to 14 subscribers. The solution utilizes Ethernet in the access network for an all IP system.

"We were able to go and cover our whole exchange with a couple of repeaters to about 9.5 miles out," said McGuire. "It was a good solution but it tends to be pretty expensive further out."

Due to the average size of rural businesses, FarmTel has engineered its network for primarily residential usage and traffic patterns. "You've got to remember this is rural Iowa," emphasized McGuire. "The business customer is the local feed store." As such, FarmTel treats its customers equally regardless of whether they are a residential or business subscriber. DSL services are offered at a single price. "We make no differential for whether it's a business or residential customer," said McGuire. "They both get the same level of high quality service."

Subscriber growth during the first year and one-half of offering DSL service met all expectations. Demand for DSL continued to be steady. However, in early 2002, an unexpected growth opportunity presented itself that forced FarmTel to take a step back and reevaluate its Internet services going forward.

Meeting the Demand for Broadband

"A neighboring town got a petition together and went to their existing LEC which told them if they got 13 customers signed up for DSL, they would bring DSL to the town," recalled McGuire. "They waited, waited and waited and the service never came." Soon thereafter, FarmTel started to receive multiple requests from residents in neighboring exchanges. "These neighboring towns wanted us to come over and basically become the CLEC for DSL," said McGuire. CLEC operation would have been a departure from the successful business model that FarmTel operated under for over 65 years.

A FAR REACHING NETWORK

FarmTel effectively uses a combination of 2.4, 5.2 and 5.8 GHz network equipment for point-to-point and point-to-multipoint to supply broadband service to the surrounding community. Once the Canopy access points were in place, it was simply a matter of adding subscriber modules to grow the system.

APPLICATION SPOTLIGHT:
REMOTE VIDEO MONITORING

Utilizing a combination of commercially available web-capable video equipment and Motorola Canopy wireless broadband, FarmTel will be able to offer one of their new business customers the ability to develop and deploy a remote monitoring system for its network of fuel stations that could be continuously monitored from any web browser on a 24/7 basis.

Without Motorola Canopy a remote monitoring system such as this would have required dedicated data lines, such as DSL, and therefore would have been cost-prohibitive.

McGuire remarked, "To me that's a no-win situation. If a customer has a problem, they call me. If it's a plant issue, I'd have to call the owner of the infrastructure because it's not my plant and I'm not allowed to work on it. And of course, it's not their customer and so it's always going to be a low priority. Nobody wins in that situation."

FarmTel began to evaluate alternatives for offering DSL in neighboring exchanges and at the far ends of its ILEC footprint. "We had to find some way of doing DSL without using someone else's cable plant," said McGuire.

FarmTel sought advice from one of their long term product suppliers Electronic Engineering. FarmTel's Motorola two-way radio supplier for the past 20 years. "Electronic Engineering came up and showed me Canopy and I said, 'Hey this fits the bill for what we're looking for,'" recalled McGuire.

But FarmTel had a number of concerns regarding RF support and interference in the unlicensed band. McGuire stated, "We're used to dealing with wires. We really wanted the RF side support. I wanted something that was going to go in and work reasonably easy and have great support. I felt a high level of confidence because I knew Motorola wouldn't put their name on a product unless it worked extremely well."

As a company that prided itself on quality service, FarmTel was concerned that the unlicensed band was unreliable and prone to interference. Consumer experiences with 2.4 GHz wireless products in the past were fraught with interference problems. "I had a customer that used a WIFI camera to monitor his stables and the network would go down every time his neighbor used the microwave to pop popcorn," joked McGuire. "The unlicensed band was definitely a scare factor given 2.4 GHz history so we were thoroughly skeptical initially with Canopy being in the unlicensed band. Interference issues were a big concern on our end."

In the Spring of 2002, FarmTel began extensive testing of Canopy and their concerns about unlicensed, wireless technology (interference mitigation, security, product reliability) were put to rest. Simultaneously, they developed a business case to justify wireless broadband over DSL. Upon presenting the test results and the business case to its board of directors, management received approval in Fall 2002 to rollout its Canopy wireless broadband based service. The initial site was in the town of Winfield. By Thanksgiving 2002, Canopy was commercially available to its customers. It was a six month-long process to get final approval. "The decision from my board of directors took longer than the actual deployment of the Canopy system," mused McGuire. "We installed Canopy the same day we received approval. It took less than eight hours."

FarmTel's wireless broadband service is marketed at 256KB/symmetrical. Although the Canopy wireless broadband based network is significantly less expensive then their DSL network, the service has been priced comparable to DSL, which helps maintain existing DSL subscribers and the existing DSL infrastructure investment. But initial uptake was slower than expected. "We were worried the service wasn't taking off," said McGuire.

During 2002, prior to FarmTel's service launch, a couple WISP providers marketed a 2.4 GHz service. "People were paying between $600 and $700 for premise equipment and then the system didn't work half the time," recalled McGuire. "People were really soured on wireless. It took a while for the word of mouth to get around that the Canopy service really works and it doesn't go down."

"Since we put our first tower up, we have been down on only three occasions for any length of time," acknowledged McGuire. None of these issues were a result of the Canopy wireless broadband products. "First time we went down a small tornado came through and power went down. We ran till our batteries went out. Second time the painting crew used a conduit to hang a paint can and the conduit gave out. The third time our Mount Pleasant tower took a lightening strike and knocked out an individual access point. Luckily, it was located in a direction where we didn't have any customers yet." The high performance and reliability of the Canopy network has made a strong impression on customers and is contributing to the solid subscriber growth of FarmTel's broadband service.

Business Case Realities for DSL Services

On a Per-Subscriber Basis

The following cost estimates illustrate the economics of deploying traditional DSL services. The DSL pricing below may vary based on equipment manufacturer and is meant to illustrate a rural deployment such as FarmTel.

DISTANCE	0 TO 3 MILES	3 TO 6 MILES	6 TO 9 MILES
DSL User	$ 875	$ 1,215	$ 1,555
Payback	22 months	30 months	39 months
Assumptions			
Average Price per DSL User			
DSLAM Shelf (pro-rata)	$ 150*		
DSL Line Card (per user)	$ 325		
DSL CPE (per user)	$ 400		
Total	$ 875		
(Plus: Repeater per user as required every 3 to 4 miles)	$ 340		

^ Number of months to recover cost based on $39.95/month
* DSLAM Shelf includes Mux card and fan/baffle. Cost: $2169 with capacity for 14 line cards. Pro-rata calculation: $2100/ 14=$150/per user.
Data current as of June 2006

Summary Business Case for Canopy Wireless Broadband

On a Per-Subscriber Basis

Service providers using the Canopy system can experience payback in less than 12 months depending on a number of parameters. This business model shows payback in 11 months.

	ITEM	UNITS	NOTES
REVENUES			
Monthly Fee	$ 39.95	/subscriber/month	
Installation Fee	$100.00	/subscriber	
COSTS			
Fixed Costs			
Total CPE Cost	$305.00	/subscriber	See detail below
CPE Cost	$250.00	/subscriber	100 Pack 2.4, 5.2 & 5.8 GHz MSRP
CPE Ancillary	$ 55.00	/subscriber	Power Supply, 300SS, Bracket MSRP
CPE Installation	$ 75.00	/subscriber	Assumes non-union SatTV installer.
Customer Acquisition	$ 40.00	/subscriber	Source: US WISP (Assuming conversion of existing customers)
Wireless Network	$ 15.64	/subscriber	See detail below
Total Fixed Costs	$435.64	/subscriber	
Monthly Costs			
Site Rental & Utilities	$ 0.42	/site/month	See detail below
Connectivity Costs	$ 1.25	/subscriber/month	See detail below
Billing and Support	$ 1.50	/subscriber/month	Source: US WISP
Email, Content services	$ 5.00	/subscriber/month	Source: US WISP
Admin, other	$ 0.50	/subscriber/month	Source: US WISP
Total Monthly Costs	$ 8.67	/subscriber/month	

Months to Break Even: 11 months

The Motorola point-to-point series of wireless Ethernet bridges now includes the Canopy Backhaul portfolio. These products include the PTP 100 Series, PTP 400 Series and the PTP 600 Series. To find out more information about these products visit www.motorola.com/solutions/p2p.

Looking to the Future

Since the initial deployment of Canopy, FarmTel has turned-up an additional two sites. The second site rolled out in April 2003 which was followed by a third site in December 2003.

Site surveys have been completed for additional sites and are dependent on ongoing customer demand. "We try to be a little more proactive," said McGuire. "If we see a need in an area and it's not being met, we're trying to fill that need and get our foot in the door. First guy in the pond gets to rule the pond."

McGuire highlighted one example of this that also spotlights a unique application of Canopy. "Our next tower down in Huffton is the headquarters for a gas station – convenience store operator. They wanted higher speeds to monitor [via web cam] what is going on in their stores. [Electronic Engineering told us] this area had a need for higher speeds and wanted to know if we were willing to extend our area and of course we were." VoIP is another application on the radar screen for FarmTel but existing regulatory issues around local number portability have not yet been settled.

Today, total wireless broadband customers now exceed FarmTel's DSL subscriber base. "We haven't done a lot of advertising," stated McGuire. "Our biggest seller has been word of mouth."

As for his board of directors, McGuire grinned, "They love it. It's nothing but a money maker for us."

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